

**REMARKS****Summary of the Office Action**

Claims 1-2 and 5-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Satoru et al.* (Japanese Patent Document No. 09-304182) in view of *Poole et al.* (U.S. Patent No. 5,134,274).

Claims 3-4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Satoru et al.* (Japanese Patent Document No. 09-304182) in view of *Poole et al.* (U.S. Patent No. 5,134,274) and further in view of *Tashiro et al.* (US Patent Publication No. 2002/00117611).

Claims 8-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Satoru et al.* (Japanese Patent Document No. 09-304182) in view of *Poole et al.* (U.S. Patent No. 5,134,274) and further in view of *Miyashita et al.* (US Patent Publication No. 2001/0028401).

**Summary of the Response to the Office Action**

Applicant has amended claims 1 and 3, and have added new claim 10. Accordingly, claims 1-10 are presently pending.

**Priority Documents**

On October 12, 2001, Applicant filed a certified copy of Japanese Patent Application No. 1999-105442, to which the present application claims benefit, with the U.S. Patent and Trademark Office. Applicant respectfully requests that receipt of the certified copy be acknowledged in the next communication by checking the corresponding boxes. If receipt of the certified copy cannot be acknowledged for some reason, the Office is respectfully requested to contact Applicant's undersigned representative as soon as possible.

**The Disposition of the Claims**

Claims 1-2 and 5-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Satoru et al.* (Japanese Patent Document No. 09-304182) in view of *Poole et al.* (U.S. Patent No. 5,134,274). Claims 3-4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Satoru et al.* in view of *Poole et al.* and further in view of *Tashiro et al.* (US Patent Publication No. 2002/00117611). Claims 8-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Satoru et al.* in view of *Poole et al.* and further in view of *Miyashita et al.* (US Patent Publication No. 2001/0028401). Applicants traverse the rejections for at least the following reasons.

**(i) Claims 1-2 and 4-10**

With respect to independent claim 1, as amended, Applicants respectfully assert that the applied art, whether taken singly or combined, does not teach or suggest a combination including a first back-illuminated semiconductor image pickup element and a second semiconductor image pickup element wherein “respective fronts of [the] first back-illuminated semiconductor image pickup element and [the] second semiconductor image pickup element being closer to each other than their respective backs” as recited in claim 1.

*Satoru et al.* (which relates to the technology discussed in the Background section of the present application) discloses a semiconductor device having a first semiconductor image pickup element, and a second semiconductor image pickup element secured to the first semiconductor image pickup element. However, neither of the pickup elements in the device of *Satoru et al.* are a back-illuminated semiconductor image pickup element. Instead, both pickup elements of *Satoru et al.* are front-illuminated pickup elements with the front of one pickup element adjacent

to the back of the other pickup element. As a result, respective fronts are not closer to each other than respective backs as set forth in claim 1, as amended. In accordance with the configuration disclosed by *Satoru et al.*, this device suffers from a number of limitations as discussed, for example, at page 2, lines 9-22, of the present application.

*Poole et al.* discloses a device having only one image pickup element mounted on a glass substrate. Here, detectable light enters from both sides of the device. That is, one light image enters the image pickup element directly and the other light image enters the same image pickup element via the glass substrate from the opposite side. Since *Poole et al.* lacks a second image pickup element, *Poole et al.* cannot remedy the deficiencies of *Satoru et al.* as noted above.

Applicant respectfully asserts that the Office Action does not rely on *Tashiro et al.* *Miyashita et al.* to teach any feature of claim 1. Moreover, Applicant respectfully asserts that *Tashiro et al.* *Miyashita et al.* cannot remedy the deficiencies noted above. Thus, Applicant respectfully submit that the rejection under 35 U.S.C. § 103(a) is improper and should be withdrawn.

In accordance with the present application, a back-side illuminated image pickup device receives light image from its back side and the photosensitive region is positioned on the side that is opposite to the back side. The back-side illuminated image pickup device is used while its top surface down. That is, this image pickup device is upended when in use. Thus, the “image focus distance difference problem” discussed at page 2, lines 9-22, of the present application is solved by using such a back-side illuminated image pickup device. When non-back-side illuminated image pickup devices (such as disclosed by *Satoru et al.*) are laminated to each other, respective photosensitive regions thereof are separated. However, when one of the image pickup

device is a back-side illuminated image pickup device, as claimed, the photosensitive regions of the first and second image pickup devices can be close to each other, and both of the images picked up by the image pickup elements become clear.

Accordingly, as set forth above, Applicant respectfully asserts that the rejections under 35 U.S.C. § 103(a) should be withdrawn because the applied art, whether taken singly or combined, does not teach or suggest each feature of independent claim 1, as amended. Further, Applicant respectfully asserts that dependent claims 2 and 4-9 are allowable at least because of their dependence from independent claim 1, as amended, and the reasons set forth above. Moreover, Applicant respectfully asserts that new dependent claim 10 is allowable at least because of its dependence from independent claim 1, as amended, and the reasons set forth above.

(ii) Claim 3

Claim 3 has been rewritten in independent form. Applicant respectfully asserts that *Tashiro et al.* (which is relied upon by the Office Action in rejecting claim 3) should not be considered as prior art. The filing date of *Tashiro et al.* is July 6, 2001 which is after the international filing date of April 13, 2000 (regarded as the filing date of the US application by treaty). Applicant respectfully asserts that claim 3 of the present application is fully supported by the disclosure of PCT/JP00/02424 as evidenced at least by the figures therein, and therefore, is entitled to the filing date thereof. A copy of the published PCT/JP00/02424 is attached hereto as a courtesy. Thus, *Tashiro et al.* should be removed as prior art, and the rejection of claim 3 under 35 U.S.C. § 103(a) should be withdrawn.

**Conclusion**

In view of the foregoing, Applicant respectfully requests reconsideration and the timely allowance of the now pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicant's undersigned representative to expedite prosecution.

Attached hereto is a marked-up version of the changes made by the current amendment. The attachment is captioned, "Version with markings to show changes made."

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE****IN THE CLAIMS:**

Claims 1 and 3 have been amended as follows:

1. (Amended) A semiconductor device comprising:

a first back-illuminated semiconductor image pickup element, having a front and a back  
and a first photosensitive region which is closer to said front than said back thereof; and

a second semiconductor image pickup element also having a front and a back and a  
second photosensitive region which is closer to said front than back thereof, said second  
semiconductor image pickup element being made of a semiconductor material different from that  
of said first back-illuminated semiconductor image pickup element,

wherein said first back-illuminated semiconductor image pickup element ~~is disposed~~  
~~such that respective photosensitive regions~~ and said second semiconductor image pickup  
element are secured such that respective fronts of said first back-illuminated semiconductor  
image pick-up element and said second semiconductor image pickup element are ~~adjacent to~~  
~~each other~~ closer to each other than their respective backs.

3. (Amended) ~~The~~ A semiconductor device ~~as recited in claim 1, characterized in~~  
~~that~~ comprising:

a first back-illuminated semiconductor image pickup element; and

a second semiconductor image pickup element made of a semiconductor material  
different from that of said first back-illuminated semiconductor image pickup element,

wherein said first back-illuminated semiconductor image pickup element is disposed  
such that respective photosensitive regions of said first back-illuminated semiconductor image  
pickup element and said second semiconductor image pickup element are adjacent to each other,  
and

wherein mutually opposite faces of said first back-illuminated semiconductor image  
pickup element and said second semiconductor image pickup element are adhered via at least  
three or more bumps.

New claim 10 has been added.